Approved For Release 2004/11/30 : CIA-RDP78B04770A000300040007-9

File

STAT

5 February 1968

Reference: Request for Proposal No. RD-14-68, Project No. 02037.

Subject: Proposal for prototype fabrication of advanced 9" x 18" Light Table.

Gentlemen:

STAT is pleased to submit its proposal in response to your letter of 21 December 1967.

Enclosed is our "Descriptive Specification, Proposed Advanced 9" x 18" Light Table" dated 2 February 1968.

The above specification describes in detail our approach to the design of this equipment. Since this unit uses to a large extent existing systems and components which we currently use and market, and since the special configuration requires little in the way of new development, we do not feel that this equipment warrants the use of cost-plus-fixed-fee contracting.

Therefore, we offer the prototype or first article for approval on a fixed price basis.

The price for the prototype does not cover the development cost for this equipment. Rather, this price reflects the high costs of producing a single unit, plus extra costs entailed in testing, evaluation and minor modifications as found necessary. The price of the prototype does include necessary status reports, briefing board, three each operator's and maintenance manuals (on completion of the prototype), andtwo sets of reproducible engineering drawings. It should be noted that much of the information contained in such drawings is proprietary, and that these drawings are furnished solely for Government use as required

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Declass Review by NGA.
Approved For Release 2004/11/30 : CIA-RDP78B04770A000300040007-9

Approved For Release 2004/11/30 : CIA-RDP78B04770A000300040007-9

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for maintenance and repair of the equipment. Use for other purposes will require specific approval by [redacted] STAT

We believe the equipment described in our specification will be entirely satisfactory for the intended purposes. No problems appear to us at this point without reasonable solutions.

The price for one (1) each advanced 9" x 18" Light Table Prototype is STAT [redacted] delivered in the Metropolitan Washington area. Delivery can be made within 120 days after notice of award.

Terms are less 1% for 10-day payment; 1/2 of 1%, 20-day; net 30-day.

Projected price estimates for quantities are as follows:

STAT

25 units	[redacted]
50 units	
75 units	
100 units	

We trust the above information is satisfactory in every respect. If you require further details, please advise.

Very truly yours,

[redacted] STAT

Vice President

Enc: Specification

Approved For Release 2004/11/30 : CIA-RDP78B04770A000300040007-9

Approved For Release 2004/11/30 : CIA-RDP78B04770A000300040007-9

Specification No. DB-1003
Issue Date: 31 August 1966

GENERAL REQUIREMENTS FOR THE PREPARATION OF TECHNICAL MANUALS

1. SCOPE

1.1 This specification covers the general requirements for the preparation of technical manuals. The requirements of this specification shall apply to manuals which describe the operation of equipment and to manuals which cover the maintenance of equipment.

2. APPLICABLE DOCUMENTS

2.1 The following document forms a part of this specification.
U.S. Government Printing Office Style Manual.

3. REQUIREMENTS

3.1 General - The text shall be factual, specific, concise and so clearly worded as to be readily understandable. It shall:

(a) Provide sufficient information to insure peak performance of the equipment.

(b) Omit discussions of theory except where essential for practical understanding and application.

(c) Reflect engineering knowledge in the most easily understood wording possible.

(d) Avoid technical phraseology requiring a specialized knowledge, except where no other wording will convey the intended meaning.

3.2 Types of Manuals - Two types of manuals will normally be supplied by the contractor on all equipment oriented contracts. The minimum content of each type of manual shall be as specified below and in following sub-paragraphs.

Approved For Release 2004/11/30 : CIA-RDP78B04770A000300040007-9

Approved For Release 2004/11/30 : CIA-RDP78B04770A000300040007-9

3.2.1 Operators Manual - This type of manual should contain only that information needed to operate the equipment efficiently and safely. The Operators Manual will normally include the following data:

Front matter
Introduction or General Information
Operating Instructions
Operators Maintenance
Emergency Procedures

3.2.2 Maintenance Manual - This type of manual should be written for use by personnel who are qualified technicians in the field of optics,mechanics, and electronics. The purpose of this manual is to provide the necessary instructions to properly perform routine preventative maintenance and to be able to quickly locate and repair or replace defective components. The Maintenance Manual will normally include the following data:

Front Matter
Functional Description
Checkout Procedures
Trouble Shooting Procedures
Servicing
Removal & Replacement Procedures
Repair Procedures
Parts List

3.3 Contents - Manuals shall contain the following data arranged as indicated in paragraph 3.2. Where indicated sections obviously do not apply, or when additional information is required, the proposed changes in coverage or format shall be submitted to the technical representative for approval.

3.3.1 Front Matter - Standard front matter, listed in the normal sequence of appearance, shall consist of the following:

Cover and Title Page - The cover shall contain the information shown in Figure I.

The title page shall contain the information shown in Figure II.

Table of Contents - The table of contents shall list all primary divisions (sections, and sub-sections) with their corresponding page numbers. In multi-volume manuals, each volume shall contain its own table of contents. See Figure III for the suggested format.

Approved For Release 2004/11/30 : CIA-RDP78B04770A000300040007-9

Approved For Release 2004/11/30 : CIA-RDP78B04770A000300040007-9

List of Illustrations - The list of illustrations shall contain a complete listing of figures, titles, and page numbers. In multi-volume manuals, each volume shall contain its own list of illustrations. See Figure IV for the suggested format.

List of Tables - The list of tables shall contain a complete listing of all tables, titles, and page numbers. In multi-volume manuals, each volume shall contain its own list of tables. See Figure V for the suggested format.

Frontispiece - The frontispiece shall contain a photograph or sketch of the equipment or system. In multi-volume manuals, each volume shall contain its own frontispiece.

3.3.2 General Information - The operators manual shall include an overall description of the functions and purpose of the equipment. This information is intended for use by personnel requiring a general summary of the equipment or system and its performance, advantages and limitations.

3.3.3 Description - The functioning of the equipment or system as a whole and its inter-related units shall be described. The functional description shall be non-technical in nature and shall describe the intended use, capabilities, and the limitations of the equipment or system. Flow diagrams, schematic diagrams and functional black diagrams necessary for understanding system or equipment functions and performing trouble analysis will be included in this section. Text covering physical descriptions, or structural arrangements shall be brief. Special attention should be given to avoidance of unnecessary details that are easily illustrated. A list of equipment supplied, together with the approximate volume, weight, and overall dimensions of each unit, as applicable, shall be included. In addition, a compilation of quick-reference data shall be included. The quick-reference data shall consist of pertinent technical or design characteristics of the equipment. Examples of such data are:

(a) Functional characteristics, such as:

Power requirement
Types of operation
Power output
Frequency
Pulse characteristics
Sensitivity; selectivity

Approved For Release 2004/11/30 : CIA-RDP78B04770A000300040007-9

Approved For Release 2004/11/30 : CIA-RDP78B04770A000300040007-9

(b) Capabilities, such as:

Rated ranges
Coverage
Resolution
Accuracy

(c) Rated outputs, such as:

Wattages
Voltages
Horsepower

(d) Special characteristics, such as:

Operating temperatures
Pressure
Humidity
Tolerances

(e) Other pertinent characteristics

3.3.4 Operating Instructions - Operating instructions shall contain the essential information required by the operator for normal operation of the equipment or system. This shall include such instructions as are necessary for setting up or preparing the equipment for use, required warm-up procedures, starting the equipment, verifying normal operation, shut down and post shutdown requirements. Where procedures are to be performed in a specific sequence, step-by-step procedures shall be given and shall include any tables or charts necessary to present such procedures. Adequate illustrative material shall supplement the text, to identify and locate all operating control and indicating devices.

3.3.5 Operator's Maintenance - The information provided shall include any maintenance procedures within the capability of an operator. This capability is limited to procedures governing periodic inspection, cleaning, servicing, preservation, lubrication, adjustment, and minor parts replacement (fuses, dry batteries, indicator lamps, and so forth) which do not require the need for internal alignment or complex adjustment.

3.3.6 Emergency Procedures - Emergency procedures shall consist of actions taken in the event of equipment malfunction. Safe shut down and methods of reactivating the equipment shall be included. Detailed step-by-step procedures on specific sequential operations shall be presented in tabular, checklist form to the maximum extent feasible.

Approved For Release 2004/11/30 : CIA-RDP78B04770A000300040007-9

Approved For Release 2004/11/30 : CIA-RDP78B04770A000300040007-9

3.3.7 Checkout Procedures - Step-by-step checkout procedures required to verify satisfactory operations shall normally be presented in tabular form. The instructions shall clearly indicate why the checkout is performed and what conditions are to be sought. When malfunctions occur, references to appropriate trouble shooting procedures shall be made.

3.3.8 Servicing - Servicing requirements include cleaning, lubricating, replacement procedures and other preventive maintenance procedures which apply to the particular equipment. For systems, reference shall be made to the applicable equipment manuals which spell out various servicing procedures.

3.3.9 Trouble Shooting - The manual shall provide adequate details for quickly and efficiently locating the cause of an equipment malfunction. The discussion shall contain concise information on how the equipment operates. The discussions shall be in order of operational or data sequence, as applicable. Block diagrams, performance curves, and nomographs shall be used to support the discussion whenever necessary. Trouble-shooting information required to localize any trouble to a particular functional division (or unit) shall be included to serve as a guide in isolating faults.

3.3.10 Removal and Replacement Procedures - These procedures shall provide step-by-step procedures for removal and replacement of items which are subject to frequent replacement. These instructions should provide for a judicious combination of text and illustrations. Obvious detail steps should be omitted. If special tools are required they shall be listed immediately preceding the detailed instructions for the job.

3.3.11 Repair Procedures - Only the repair procedures which must be performed in place shall be provided. These instructions shall provide the necessary information to bring the equipment up to the required serviceable standard when it becomes unserviceable. If checkout is required to verify satisfactory operation of the equipment, applicable reference to the appropriate section of the manual shall be made.

3.3.12 Parts List - The parts list shall include identification data covering all maintenance parts, to facilitate ready identification of the parts for replacement and ordering purposes. Standard hardware, structural parts, or other parts which have no maintenance significance shall not be listed. A brief introduction, if appropriate, and the applicable tables listed below shall be included:

Approved For Release 2004/11/30 : CIA-RDP78B04770A000300040007-9

Approved For Release 2004/11/30 : CIA-RDP78B04770A000300040007-9

(a) The tabulation shall consist of the following data: reference designation, alphabetically-numerically keyed to an illustration or schematic diagram; part name; description or function; and the manufacturer's name and part number.

(b) When appropriate, a list of any special tools supplied with the equipment or required for maintenance shall be provided at the end of the parts list.

3.3.13 Schematic - A schematic wiring diagram shall be provided for electrical or electronic equipment.

3.4 Style -

3.4.1 Grammar - Person and Mode - The third person indicative mode shall be used for discussion and description. The second person imperative mode shall be used for operating procedures.

3.4.2 Rules - Capitalization, spelling, compound words, and punctuation shall be in accordance with the Government Printing Office Style Manual.

3.4.3 Special Instructions - Modifications to the text of the manual shall be in accordance with the following:

NOTE: An operating procedure, condition, etc., which it is essential to highlight.

CAUTION: Operating procedures, practices, etc., which if not strictly observed, will result in damage to or destruction of equipment.

WARNING: Operating procedures, practices, etc., which will result in personal injury or loss of life if not correctly followed.

When used, cautions and warnings should immediately precede the applicable instructions. Notes, cautions and warnings shall not be numbered.

3.4.4 Definitions -

Change - Modification of information in an existing manual.

Revision - Second or subsequent edition of a manual which supersedes the preceding edition.

Approved For Release 2004/11/30 : CIA-RDP78B04770A000300040007-9

Approved For Release 2004/11/30 : CIA-RDP78B04770A000300040007-9

Reprint - Second or subsequent printing of a manual without change.

Addendum - Addition to a manual which can be inserted into the proper place in the manual.

Supplement - Subsidiary document which complements information in a manual.

3.4.5 Measurement - Units of measurement shall be those accepted and used in the technical field under discussion; units in the text shall conform to the units used on instruments and other indicators on the equipment.

3.4.6 Pagination - Pagination for the Table of Contents shall be small Roman numerals, i.e., i, ii, iii, iv, v, etc., in lower right hand corner of the page. Pagination for the body of the manual shall be Arabic numerals, i.e., 1, 2, 3, 4, 5, etc., in lower right hand corner of the page.

3.4.7 Security - If a classification is necessary, it shall be assigned on the contract. The appropriate classification shall be centered and printed or stamped 1/2 inch from the top and bottom of the front and back covers and on each page of the manual, including illustrations, in letters 1/4 inch or more high. Other controls and restrictions that are required shall be outlined on a specific basis.

3.4.8 Reference Method - The method of referencing within a manual shall be as follows: to sections - by section number; to tables - by table number; to illustrations - by figure number. If a manual is divided into volumes, the volume number shall be included as part of the reference.

3.4.9 Identification - Section headings shall be centered and numbered consecutively with an Arabic numeral followed by a period and the title in capital letters; e.g.

1. GENERAL INFORMATION. Sections shall start at the margin and be numbered consecutively with an Arabic numeral, which corresponds to the numeral in the section heading, followed by a period, another Arabic numeral consecutively numbered, and the title in capitals and lower case: e.g.,

Approved For Release 2004/11/30 : CIA-RDP78B04770A000300040007-9

Approved For Release 2004/11/30 : CIA-RDP78B04770A000300040007-9

1.1 Scope. Sub-sections shall start 1/2 inch from the margin and be numbered consecutively in the same manner as the sections with the addition of a period, followed by an Arabic numeral consecutively numbered, and the title in capitals and lower case; e.g., 1.1.1 Special content.

3.4.10 Illustrations - Illustrations shall be identified by a figure number in Roman numerals, and title. The figure number and title shall be positioned immediately beneath the illustration as held in a reading position. In addition, illustrations shall be positioned as near as possible to the applicable text material.

3.4.11 Tables - Tables shall be identified by a table number in Arabic numerals, and title. The table number and title shall be positioned above the table as held in a reading position. In addition, tables shall be positioned as near as possible to the applicable test material.

3.4.12 Page Ending - Pages shall begin and end with a paragraph.

3.5 Reproduction and Production -

3.5.1 Kinds of Reproduction - Whenever practical, manuals shall be reproduced by multilith, letter press or some photo offset means. When the number of copies required dictates a more economical reproduction method, the proposed method must be approved by the technical representative.

3.5.1.1 When the contract specifies that reproducible copy of the instruction manual is a deliverable item, such copy shall be prepared for offset printing. Art work will be supplied in accordance with the applicable paragraphs of 3.6.

3.5.2 Size - Manuals shall be 8 1/2 x 11 inches, unless otherwise specified.

3.5.3 Number of Copies - Unless otherwise specified, one copy of each type of manual shall be provided for each piece of equipment supplies plus a surplus of 50 percent. A minimum of two copies of each type of manual will be supplied.

3.5.4 Paper - The paper used shall be good quality paper appropriate for the reproduction method used.

3.5.5 Covers - Covers shall be of flexible plastic or good quality paper stock. Covers need not include any printed matter (other than security classification) if suitable cut-out windows are provided.

Approved For Release 2004/11/30 : CIA-RDP78B04770A000300040007-9

Approved For Release 2004/11/30 : CIA-RDP78B04770A000300040007-9

3.5.6 Binding - Manuals shall normally be provided as bound volumes, with saddle or side-stitching. If specified in individual cases or when approved by the technical officer, manuals may be provided in loose leaf form.

3.5.7 Trade Marks - In no instance, except in the Parts List shall the manufacturer's name, signature, symbol, or trade mark appear in the text, cover, or illustrations.

3.6 Art -

3.6.1 Scale - Illustrations shall be to as small a scale as possible with all essential detail legible; be same size as areas they will occupy on the manual page or such oversize as to permit uniform reduction to this size.

3.6.2 Line Art -

(a) Line art shall be of high reproduction quality. India ink or other suitable material capable of maintaining consistent high density tonal values shall be used for preparing the line drawings.

(b) Only copy prints of pencil drawings shall be acceptable. Engineering drawings which may not have been prepared primarily for illustration purposes are acceptable as illustrations if the copy is legible, reproducible and readable when reduced in size.

(c) Line weights shall be of sufficient strength to reproduce clearly at required reproduction size. Parallel lines on wiring and schematic diagrams, as a general rule, shall be not less than 1/8 inch and in no case less than 1/16 inch apart when reduced to printed size.

(d) Secondary lines such as those used to indicate extensions or measurements shall be of lighter weight but strong enough to reproduce clearly at reproduction size. Shading effects shall not be used for decorative purposes or be permitted to distort or destroy the form. Lines, crosshatching or patterns used for shading shall be of sufficient size to withstand the process of reduction to reproduction size.

3.6.3 Continuous Tone Art - All art containing tonal values of grey as well as black, which is not created by lines or dots, shall be considered Continuous Tone Art. Such art, whether photograph or drawing, shall be clear in

Approved For Release 2004/11/30 : CIA-RDP78B04770A000300040007-9

Approved For Release 2004/11/30 : CIA-RDP78B04770A000300040007-9

detail, sharp in contrast of tones and with light and shadow in proper relation to the actual light source. Separation of planes shall be shown by differences in tonal values rather than by lines.

3.6.4 Retouching - Photographic retouching shall be held to the absolute minimum by utilizing good photography to clarify planes by tonal separation, emphasize essential detail, correct slight camera defects and eliminate undesirable shadow. Quality shall be such that tonal values are held when reproduced.

3.6.5 Additional Requirements for Photography - Glossy prints shall be made from crisp, clear, well-exposed negatives. They shall be detailed and sharp, be free of heavy shadows, distorted objects, cluttered foregrounds or backgrounds, and give good contrast from white, middle tones and black.

3.6.6 Combination Art - Representation of a subject by combining line and continuous tone art shall be limited to where this treats the subject better.

3.6.7 Tables, Charts, Graphs - The use of tables, charts, graphs shall be considered and handled as illustrations whether produced in line, halftone or tabular form.

3.6.8 Cartoons - Cartoons and similar material shall only be used in manuals when authorized by the technical officer.

3.6.9 Tints and Patterns - Tints, patterns, cross-hatching, dots, etc. in black and white shall be used in lieu of colors.

3.6.10 Fold-out Sheets - Fold-out sheets shall be used only when the material cannot be satisfactorily presented on a single page.

3.6.11 Cropping and Marking Art - Separate art shall have the reproduction area defined on all four sides by crop marks which shall extend at least 3/4 inch beyond illustration. The exact reproduction size shall be indicated between the required marks.

3.6.12 Marking Art for Identification - Art shall bear the figure number, title, security classification, if required, and page number, when it comprises a full page.

Approved For Release 2004/11/30 : CIA-RDP78B04770A000300040007-9

Approved For Release 2004/11/30 : CIA-RDP78B04770A000300040007-9

3.6.13 Defining Direction of Art Placement - All art shall have the top clearly marked. Identification shall be outside the reproduction area.

3.6.14 Callouts on Art - Callouts on art shall be used when necessary to explain or identify significant features or components. Index numbers shall start with Arabic number 1 and run consecutively. Sequence shall be from top to bottom or clockwise. Nomenclature on line art of more than one line shall have the left-hand margin justified.

3.6.15 Keying Index Numbers - When index numbers are used, a key consisting of the numerical listings and their corresponding nomenclatures shall be included in (or adjacent to) the art. Keys used outside art shall be below or adjacent to art and precede figure number and title.

3.6.16 Callout Lines - Lines shall be uniform, short and straight as possible. They shall end close to callout and object. Lines shall not cross or come in contact with other lines nor shall they obscure essential details.

3.6.17 Instructions in Procedural Illustrations - Procedural illustrations shall have one or more brief text steps with each illustrated step. The text shall be as close to the illustrated step as possible. Steps shall be numbered consecutively in Arabic numerals in the order in which they are to be accomplished, beginning with Arabic number 1.

3.6.18 Mounting Art - Separate art shall be rendered or mounted on board of two ply or more. Dimensions of the mount shall include a minimum border of 3/4 inch on all four sides of the illustration area.

3.6.19 Covering Art - Continuous tone art shall be protected by an outer flap of heavy paper and an inner flap of tissue or vellum. Line art shall be protected by outer cover only.

3.7 Mechanical Features - Manuals shall be prepared in accordance with the mechanical specifications outlined in Table 1.

3.8 Quality Control Provision -

3.8.1 Preparation - An outline shall be prepared which gives a detailed breakdown of all elements to be covered including planned charts, tables, schematics, and other illustrations. The outline should be discussed with the technical

Approved For Release 2004/11/30 : CIA-RDP78B04770A000300040007-9

Approved For Release 2004/11/30 : CIA-RDP78B04770A000300040007-9

representative and a manuscript developed which shall be submitted for approval as soon as possible or at least 30 days before completion of the production sample. In all cases, the proposed manuals shall be received and approved by the technical representative before final printing.

3.8.2 Inspection - Manuals shall be inspected to determine compliance with the requirements of this specification and for equivalence with the approved manuscript. In addition, the content of the manual shall be checked against the equipment being furnished to assure that it depicts accurately and adequately the equipment and the operating and maintenance procedures required.

3.9 Packaging and Shipment - Manuals shall be packaged separately in bulk and shipped to the same address and at the same time that the equipment is shipped. Manuals shall be packaged in containers which comply with the carrier regulations applicable to the mode of transportation. If manuals are classified, shipments shall be in accordance with security regulations.

3.9.1 Shipment of Reproducible Materials - Art work and reproducible text material furnished by the contractor shall be packaged in containers which comply with the carrier regulations applicable to the mode of transportation, and shipped to the address indicated in the contract or supplied by the technical officer. If material is classified, shipments shall be in accordance with security regulations.

Approved For Release 2004/11/30 : CIA-RDP78B04770A000300040007-9